Abstrak

OPTIMASI FORMULA SEDIAAN SAMPO GEL MINYAK SERAI WANGI (*Citronella oil*) DENGAN BASIS KARBOPOL 940 SEBAGAI ANTIFUNGI *Pityrosporum ovale*

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Latar Belakang: Minyak serai wangi mengandung citronella yang memiliki aktivitas antifungi terhadap *Pityrosporum ovale*, sehingga dapat digunakan sebagai zat aktif pada sediaan sampo gel. Pembuatan sampo gel memerlukan *gelling agent* yaitu dipilih basis karbopol. Bahan tambahan lain yaitu surfaktan anionik Sodium Lauril Sulfat (SLS) sebagai pembentuk busa. SLS dapat dikombinasikan dengan surfaktan lain yaitu Cocamide DEA yang kompatibel untuk meningkatkan kualitas foaming dan menstabilkan busa. Penelitian ini bertujuan untuk mengetahui interaksi dari ketiga bahan tersebut yang berpengaruh pada stabilitas busa, pH, viskositas, dan persentase zat padat serta mendapatkan perbandingan proporsi masing-masing bahan untuk menghasilkan formula yang optimum dan mengetahui aktivitas sampo gel minyak serai wangi terhadap *Pityrosporum ovale.*

Metodologi: Sampo gel minyak serai wangi dibuat dengan variasi konsentrasi komponen Karbopol, SLS, dan cocamide DEA dibuat 7 formula. Dilakukan evaluasi sifat fisik (organoleptis, homogenitas, pH, kemampuan dan stabilitas busa, viskositas, dan persentase zat padat) dan evaluasi stabilitas fisik sediaan sampo gel minyak serai wangi selama 6 siklus *Freeze-Thaw*. Dilakukan optimasi formula dengan metode SLD menggunakan software *Design Expert* menghasilkan formula optimum dan nilai prediksi, validasi formula optimum dengan analisis statistik uji-t *one sample*, formula optimum diuji aktivitas dengan metode difusi sumuran dan dianalisis dengan *one-way* anova taraf kepercayaan 95%.

Hasil Penelitian: Hasil penelitian menghasilkan bahwa berdasarkan analisis *design expert* tidak terdapat interaksi dari ketiga komponen dan menghasilkan formula optimum dengan komposisi Karbopol 1%, SLS 13%, dan cocamide DEA 3% dengan validasi semua respon tidak berbeda signifikan nilai *p-value*> 0,05 formula optimum mendekati nilai prediksi. Zona hambat formula optimum F4 terhadap *Pityrosporum ovale* adalah 16 mm terkategori kuat dengan persentase daya hambat 62,5%.

Kesimpulan: Formula optimum yang dihasilkan mengandung basis Karbopol 1%, SLS 13%, dan cocamide DEA 3% dengan validasi semua respon tidak berbeda signifikan nilai *p-value*> 0,05.

Kata kunci: Minyak Serai Wangi, Optimasi, Sampo Gel, Karbopol, *P.ovale*

Abstract

OPTIMIZATION OF CITRONELLA ESSENTIAL OIL GEL SHAMPOO USING KARBOPOL 940 AS ANTIFUNGAL AGAINST *Pityrosporum ovale*

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Background: Citronella essential oil contains citronella which has antifungal activity against *Pityrosporum ovale*, so it can be used as an active substance in gel shampoo preparations. The manufacture of gel shampoo requires a gelling agent of selected base Karbopol. Other additives are anionic surfactants of Sodium lauryl sulfate (SLS) as foam forming. SLS can be combined with other surfactants of the Cocamide DEA that are compatible to improve the quality of foaming and stabilize the foam. The research aims to determine the interaction of these three materials that affect the stability of the foam, pH, viscosity, and percentage of solid substances and obtain a comparative proportion of each ingredient to produce an optimum formula and knowing the activity of citronella essential oil gel shampoo against *Pityrosporum ovale*.

Methodology: Citronella essential oil gel shampoo is made with a variation of the concentration of components Karbopol, SLS, and Cocamide DEA produce 7 formulas. Conducted evaluation of physical properties (Organoleptic, homogenity, pH, agility and stability of the foam, viscosity, and percentage of solid substances) and evaluation of physical stability of citronella essential oil gel shampoo for 6 cycles of Freeze-Thaw. Optimization formula with the SLD method using Design Expert software produces optimum formula and prediction value, optimum formula validation with T one-sample test statistical analysis, the optimum formula tested activity by a well diffusion method and analyzed with a *one-way ANOVA* trust status of 95%.

Research results: The results of the study based on expert design analysis resulted that there was no interaction of all three components and resulted in an optimum formula with composition Karbopol 1%, SLS 13%, and Cocamide DEA 3% with the validation of all the response significantly different P-value > 0.05 optimum formula approaches prediction value. The inhibitory zone of the optimum formula F4 to *Pityrosporum ovale* was 16 mm strong categorized with a percentage of resistance 62.5%.

Conclusion: The resulting optimum Formula contains the base Karbopol 1%, SLS 13%, and Cocamide DEA 3% with the validation of all the response is significantly different P-value > 0.05.

Keywords: Citronella essential oil, optimization, shampoo Gel, Karbopol, *P. ovale*